

### In the Drawings

Please replace Figs. 1 and 2 with newly submitted figures on the Replacement sheet submitted herewith.

## REMARKS

Claims 1-16 are pending. Claims 1, 8 and 15 have been amended. No new matter has been added. In view of the above amendments and the following remarks, it is respectfully submitted that all of the pending claims are allowable.

In view of the replacement sheet submitted herewith, it is respectfully requested that the objection to the drawings be withdrawn.

Claims 1-14 stand rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 5,914,647 to Aized et al. (hereinafter referred to as "Aized"). Claims 14 to 16 have been rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 6,081,987 to Kalsi et al. (hereinafter referred to as "Kalsi et al.").

To anticipate a claim under 35 U.S.C. §102, a single prior art reference must identically disclose each and every claims feature. See Lindeman Maschinenfabrik v. American Hoist and Derrick, 730 F.2d 1452, 1458 (Fed. Cir. 1984). If any claim feature is absent from a prior art reference, it cannot anticipate the claims. See Rowe v. Dror, 112 F.3d 473,478 (Fed. Cir. 1997).

It is asserted by the applicants that Aized fails to identically disclose each of the limitations of the claims as presently amended. It is asserted by the applicants that Kalsi et al. fails to identically disclose each of the limitations of the claims as presently amended.

Claims 1, 8 and 15 are directed to a method of forming a winding for a high voltage transformer. In contrast, the disclosures of both Aized and Kalsi et al. show conventional techniques that are used to minimize the effect of the magnetic field of the transformer has on the windings. These methods are just extensions of the those used for copper winding transformers that have been extensively used to lower eddy current losses in copper windings. Eddy current losses in copper winding transformers can be significant when the cross sectional area of the

copper conductor is large, and hence these methods have been a long established solution to a long known problem.

When providing superconductor transformers for transforming large voltages, many hundreds of the "pancake" arrangements, e.g., 12a of Aized, will be required. Unfortunately, the interconnection between the pancakes (e.g., 12a and 12b of Aized and 44, 48 of Kalsi et al.) will be a source of failures in the superconducting material. These disadvantages are outlined in paragraph 14 of the present application. Further, as discussed in paragraph 15, pure solenoid windings also suffer from failures due to the high voltages induced along the edge of the superconductor tape which can lead to breakdowns.

The applicant has solved these problems by providing a system of interconnected solenoid windings. This substantially reduces the number of interconnections from the hundreds required by the prior art in high voltage transformers. Further, by providing multiple solenoid windings, the voltages across edges of the solenoid are also minimized, reducing the opportunities for insulation breakdown.

Neither of these problems are identified or a solution proposed by the prior art citations. The effect of providing such an arrangement is the likely dramatic reduction in the expected AC losses of the transformer hence enhancing the commercial competitiveness of superconducting transformers with winding formed by the methods of the present application.

In order to further clarify this aspect of the invention, the applicant has chosen to amend independent claim 1 and 8 to clearly highlight that the winding consists of a solenoid having a plurality of interwoven axial columns and radial rows.

The advantage that the applicant's invention has over the systems of Aized and Kalsi et al. is a dramatic reduction of the expected AC losses of the transformer compared to a transformer formed using conventional coil division methods such as those described by both Aized and

Kalsi et al.

As to claims 2-7, 9-14 and 16, these claims depend from claims 1, 8 and 15 respectively and recite further patentable subject matter in view thereof. For at the least reasons stated above with respect to claims 1, 8 and 15, both Aized and Kalsi et al. further fail to disclose the limitations of dependent claims 2 to 7, 9 to 14 and 16.


Therefore, applicant submits that claims 2 to 7, 9 to 14 and 16 are patentable in view of Aized and Kalsi et al. and the rejection of the claims be reversed. Applicants respectfully request reconsideration and withdrawal of this rejection and allowance of the application.

## CONCLUSION

In light of the foregoing, the Applicant respectfully submits that all of the now pending claims are in condition for allowance. All issues raised by the Examiner having been addressed, an early and favorable action on the merits is earnestly solicited.

Respectfully submitted,

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